

Borehole

51-07-03

Log Event A

Borehole Information

Farm : <u>TX</u>	Tank : <u>TX-107</u>	Site Number : <u>299-W15-187</u>
N-Coord : <u>41.768</u>	W-Coord : <u>75.903</u>	TOC Elevation : <u>670.00</u>
Water Level, ft : <u>94.30</u>	Date Drilled : <u>3/29/1976</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>97</u>	

Borehole Notes:

The drilling of this borehole was initiated in March 1976 with a 20-ft length of 8-in. surface casing. The borehole was driven to a depth of 100 ft and completed to a nominal total depth of 97 ft using 6-in. casing. According to the driller's records, this borehole was not perforated, but 64 gal of grout was added between the 8-in. casing and the 6-in. casing and 8 gal of grout was added the bottom of the borehole.

Water was identified in the bottom 2.5 ft of the borehole.

The casing thickness is presumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing.

The zero reference for the SGLS logs is the top of the borehole casing. The top of the casing is flush with the ground surface.

Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>04/1996</u>	Calibration Reference : <u>GJPO-HAN-5</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>4/23/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>96.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>30.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>4/24/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>31.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>0.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

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Analysis Information

Analyst : S.D. BarryData Processing Reference : P-GJPO-1787Analysis Date : 10/10/1996**Analysis Notes :**

This borehole was logged with the SGLS in two logging runs. The pre-survey field verification spectra from both log runs did not pass the acceptance criteria established for the peak shape and system efficiency. A nonconformance report issued in August 1996 (N-96-05) identified this failure as a power supply malfunction that resulted in a low detector bias voltage supplied to the logging tool. This malfunction occurred because of inadequate system warm-up time. This report also documents that concentrations calculated from data collected in the first 2 hours of logging could be systematically underestimated by about 10 percent. Therefore, the data from these log runs may show a repeatability problem upon relogging of the borehole in the future.

The post-survey field verification spectra for both log runs passed the acceptance criteria for the peak shape and system efficiency, providing evidence the logging system was operating appropriately after an initial warm-up time. Corrections for gain drifts during data collection were not necessary during processing of the data to maintain proper peak identification. The energy calibration and peak-shape calibration from verification spectra that successfully met the established acceptance criteria were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The only man-made radionuclide detected in this borehole was Cs-137. The presence of Cs-137 was measured almost continuously from the ground surface to about 13.5 ft. Zones of relatively higher Cs-137 contamination were detected within the near-surface contaminated zone at depths of about 0.5, 3, and 10 ft. Detectable quantities of Cs-137 of less than 0.2 pCi/g were also detected at depths of 23 ft, 24.5 ft, and at the bottom of the borehole. The maximum Cs-137 concentration was 3 pCi/g at a depth of 3 ft. Additional information and interpretations of log data are included in the main body of the Tank Summary Data Reports for tanks TX-106 and TX-107.

Log Plot Notes:

Separate log plots show the man-made (Cs-137) and the naturally occurring (KUT) radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made, the natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.